

**Repair Manual**  
**BMW 524 td – 535 i/US      Supplement 2**  
**12/84**

Please exchange complete manual.

Order No. 01 57 9 699 538

Bayerische Motoren Werke AG



"THIS REPAIR MANUAL IS NOT INTENDED TO BE A COMPLETE AND ALL INCLUSIVE SOURCE FOR REPAIR AND MAINTENANCE DATA. IT IS ONLY PART OF INFORMATION SYSTEM INVOLVING CONSTANTLY UPDATED MANUALS, MICROFILM, AND AUDIO VISUAL PROGRAMS. FOR THIS REASON IT MAY OMIT SOME TECHNICAL DATA WHICH MAY BE NECESSARY TO COMPLETELY MAINTAIN YOUR BMW.

WE REGRET THAT WE CANNOT SUPPLY UPDATES AND TECHNICAL REFINEMENTS TO RETAIL OR WHOLESALE CUSTOMERS WHO MIGHT PURCHASE THIS MANUAL."





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# Repair Manual

BMW 524td - 535i-US  
12/84

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## INTRODUCTION

This repair manual microfilm is to assist you in performing the necessary maintenance and repair work expertly and correctly. It must be placed at the disposal of shop foremen and mechanics, and will complement the practical and theoretical training offered by our Service training schools.

Specifications and adjusting values are shown on the technical data and nominal value microfilms.

This repair manual microfilm is in reference to a standard production car free from accident damage and not subsequently modified in any way.

The group system has been adopted from the flat rate manual.

The job numbers appearing in the text is given for cross reference. They will often contain job sections which do not concern the specific job and only serve finding pertinent repair notes.

The individual page numbering, for example 32 · 6, means:  
32 — main group  
6 — page number (in ascending numerical order)

The special tools essential for correct repair work are summarized on the special tool microfilm, Order No. 01 99 9 699 422. Their use is illustrated in the descriptions of the various repair jobs.

The removal work is described for each repair job in this manual. If installation does not take place in the reverse order of work, an "installation" note is provided.

In addition to the improvements supplied to you regularly in the form of "Service Information", you are recommended to consult the parts microfilms for additional illustrated data.

**BAYERISCHE MOTOREN WERKE AG  
SERVICE DEPARTMENT**

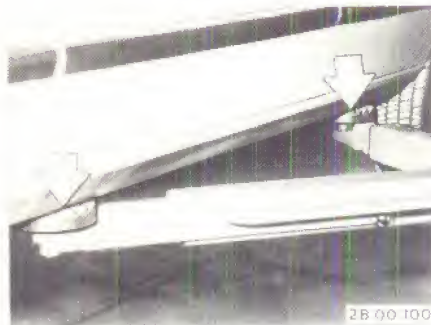
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## GENERAL INFORMATION

## LIFTING VEHICLE ON A LIFTING PLATFORM

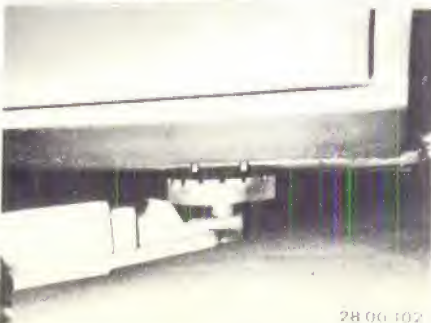
Before driving a car on the platform, make sure that there is sufficient space (clearance) between the lifting platform and vehicle (if applicable spoiler, splash guard, etc.).



Lifting platforms must conform with local and national legislative measures concerning accident prevention and maintenance. Arms of a lifting platform must always be applied only on the reinforced points of the frame members.



Front: Apply rubber block of lifting arm on the front perpendicular reinforcement of the frame member, which is also provided for application of the car's jack.



Rear: Apply rubber block of lifting arm on the rear perpendicular reinforcement of the frame member, which is also provided for application of the car's jack.

## LIFTING VEHICLE ON A WORKSHOP TROLLEY JACK

A workshop trolley jack may also only be applied for lifting the vehicle on the same take-up points described for the lifting platform.

A suitable liner (rubber, wood or plastic) must be used between the jack and vehicle to avoid damage to the undercoating, frame members or floor plate.

## Front Take-up Point



## Rear Take-up Point





## 0-3

### TOWING

Please conform with local and national legislative measures concerning the towing of vehicles as applicable.

Turn the ignition key to position "1" to unlock the steering wheel and be able to use the turn signals, horn and possibly windshield wipers.

Since the brake booster only works with the engine running, greater force will be required on the brake pedal of cars with a brake booster when the "engine is stopped".

The towing cable should be elastic to protect the towing and towed vehicles. Consequently only use plastic fiber cables or cables with elastic links.

*Cars with Automatic Transmission:*

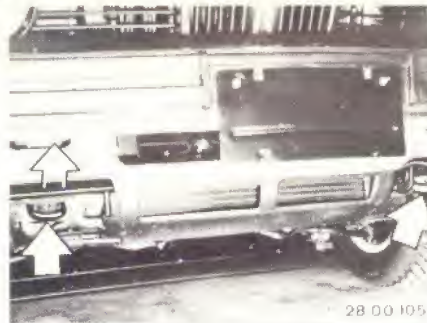
Selector lever in "N".

Max. towing speed: 50 km/h (30 mph).

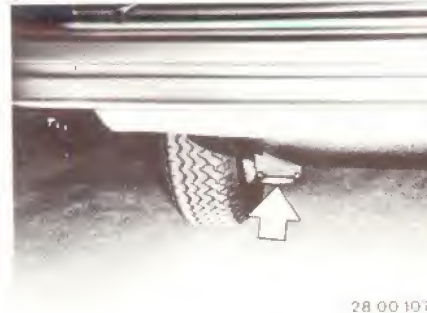
Max. towing distance: 40 to 50 kilometers  
(25 to 30 miles).

If the car has to be towed further than 50 km (30 miles) add an extra liter (2 pints) of ATF than the specified oil volume for automatics or remove the propeller shaft.

After repairing the car it is absolutely essential to correct the ATF volume to the specified amount.



Towing eyes front



Towing eye rear



# 00-1

BMW MAINTENANCE SYSTEM	General Information					Important Remarks!
	Repair Manual	Technical Data	Nominal Values	Service Information	Owner's Manual	
00 00 009 Pre-Delivery Inspection						
Check engine oil level (also check for lubricating oil dilution), replace oil and oil filter if necessary				Gr. 00	+	Only use approved oil
Check filler cap for tight fit						
Check coolant hoses for leaks and correct routing						Visual inspection
Check tightness of hose clamps						
Check correct coolant level and concentration				Gr. 00	+	Longterm anti-freeze and corrosion inhibitor
Check battery acid level, correcting with distilled water if necessary Check tightness of battery terminals						
Check condition and tightness of all drive belts, tighten if necessary	Gr. 12/32/64					
Tighten nuts and bolts on intake and exhaust manifolds		Gr. 11/18				
Check active carbon filter, hoses and connections						Visual inspection
Check spark plugs; replacing, clean and/or adjust electrode gaps	Gr. 12	Gr. 12				
Check crankcase vent hose connections						Visual inspection
524 td: check injection timing	Gr. 13					
Check oxygen sensor	Gr. 11					
Check air cleaner and intake system						
Check fuel lines, tank, tank cap and filter for tight fit and leaks. Check fuel injection for operation of components, tight fit and leaks						Visual inspection
Check catalytic converter						Visual inspection

## BMW MAINTENANCE SYSTEM

## General Information

00 00 009 Pre-Delivery Inspection

Check nuts and bolts of steering box, coupling, tie rods, front axle, brake calipers and output shafts for tightness

Gr. 32/34

Tightening torque,  
check locks and  
cotter pins

Check power steering for leaks

Check fluid level in tank for hydraulic brake and clutch systems

Gr. 34

Gr. 00

Visual inspection  
Use approved brake  
fluids only; tight-  
ening torque

Check connections and lines of brake system for leaks, damage or wrong routing

Check tire condition, tire size and type as well as tire inflation pressure (also spare wheel)

Gr. 36

Gr. 36

+

Visual inspection

Check wheel bolts for specified tightening torque

Gr. 36

Check function of lights: parking lights, turn signals, tail light, stop lights, high and low beam headlights, side marker lights, backup lights, rear fog light, license plate lights, passenger compartment light, glove box light and trunk light

+

Check aiming of headlights

Check function of horns, headlight flasher and hazard lights

+

Adjust digital clock

+



# 00-3

## BMW MAINTENANCE SYSTEM

### General Information

00 00 009 Pre-Delivery Inspection

Repair  
Manual

Technical  
Data

Nominal  
Values

Service  
Information

Owner's  
Manual

Important Remarks!

Check instrument and sign lights, and brightness control

+

Check indicator and warning lamps, clock, buzzer and check control:  
alternator, oil pressure, coolant temperature, turn signal indicator,  
oxygen sensor, seat belts lamps, ignition key warning buzzer, high  
beam indicator

524 td: check indicator lights of glow plug system

+

Check function of windshield wipe/wash system and aiming of spray  
jets, remove protective sleeves on wiper blades

+

Fill supply tank for windshield washing, check antifreeze protection

Gr. 00

Check rear window defogger

Check function of cigar lighter

Check heating and ventilating including air distribution and blower

Gr. 64

Check function of headlight cleaners and central locking system

+

Radio: check antenna trimming, tune in station, check shielding with  
engine running while switching all electric equipment on and off

Gr. 65

Check function of other special equipment, e.g. electric windows  
front and rear, sun roof in all positions, engine compartment and  
trunk lights, fog lights and aiming, radio antenna and speaker balance  
control. Check other equipment installed by dealer

Check outside mirrors



## BMW MAINTENANCE SYSTEM

## General Information

00 00 009 Pre-Delivery Inspection

Repair  
ManualTechnical  
DataNominal  
ValuesService  
InformationOwner's  
Manual

Important Remarks!

Check data plate, chassis and engine numbers

Compare ordered car equipment against delivered car equipment

Install wheel covers, if applicable ornamental rings and tailpipe extension

Place car tools in toolbox, secure jack and wheel bolt wrench

Remove label with key number on tank cap

Mount label for annual brake fluid change

Place owner's manual, list of BMW service stations, spare keys and key case in glove box.

Battery and accessory warranty cards

Radio operating manual (if equipped)

Factory Invoice (Monroney Label)

# 00 - 5

BMW MAINTENANCE SYSTEM	General Information					Important Remarks!
	Repair Manual	Technical Data	Nominal Values	Service Information	Owner's Manual	
00 00 009 Pre-Delivery Inspection						
<p>Test drive: check acceleration, coasting, brake system (before and during road test)</p> <p>Check function of Motronic</p> <p>Check car for rattling and squeaking noise</p> <p>Check handling up to 55 mph (wheel balancing)</p> <p>Check function of engine, clutch, transmission, rear axle, steering, steering wheel in straight ahead position, cars with rear disc brakes: breaking-in parking brake</p> <p>Check function of cruise control (if equipped)</p> <p>Heater and fresh air ventilation</p> <p>Check function of all instruments</p>	Gr. 34					<p>Caution: On systems with Politec brake linings, increased braking effect</p>

## BMW MAINTENANCE SYSTEM

## General Information

00 00 009 Pre-Delivery Inspection

Repair  
ManualTechnical  
DataNominal  
ValuesService  
InformationOwner's  
Manual

Important Remarks!

## After Test Drive:

Leak test on: engine, transmission, steering, final drive, dust covers on output shafts, fuel system, clutch and brake hydraulic systems and Cooling system

Visual inspection

Car cleaned and polished  
No damage on underside  
Car without scratches or damage

Visual inspection

Visual inspection

Remove seat and protective covers

*Important!*

The service indicator (SI) must be reset after completion of the pre-delivery inspection as follows.

Switch off all electrical equipment.

Turn on ignition.

Do not run engine.

Plug SI-R \* in diagnosis socket.

Push in and hold recessed, red INSPECTION button - green lamp (function control) comes on.

Red lamp also comes on after approx 3 sec. and goes out after approx. 12 sec.

Release inspection button - green lamp goes out.



62 1 100

20 00 005

## Checking Service Indicator (SI):

All five green diode lights must be on.

Yellow and possibly red diodes as well as INSPECTION sign should go out.

\* SI-R = Service indicator resetter, Order No. 62 1 100.

# 00 - 7

## BMW MAINTENANCE SYSTEM

## General Information

00 00 210 1200 Mile Inspection

Repair  
Manual

Technical  
Data

Nominal  
Values

Service  
Information

Owner's  
Manual

Important Remarks!

Replace engine oil and oil filter at operating temperature

Gr. 11

Gr. 00

+

Use approved oil  
only

Check and adjust valve clearance

Gr. 11

Gr. 11

Gr. 00

+

Longterm anti-  
freeze and corro-  
sion inhibitor

Check coolant hoses and connections as well as heater hoses for  
leaks; check coolant level and concentration, correcting if necessary

Replace oil in manual transmission at operating temperature  
(not applicable to automatic transmission)

Gr. 23

Gr. 00/23

+

Use approved oil  
only

Check ATF level in automatic transmission correcting if nec.

Gr. 24

Gr. 00/24

+

Use approved ATF  
only

Check exhaust system and catalytic converter for correct installation,  
routing, damage or leaks

Visual inspection

Tighten nuts and bolts of steering, brake calipers, output shafts and  
wheel bolts

Gr. 32/33/34  
36

Tightening torque

Check power steering for leaks and oil level, correcting if necessary

Gr. 32



## BMW MAINTENANCE SYSTEM

## General Information

00 00 210 1200 Mile Inspection

Repair  
ManualTechnical  
DataNominal  
ValuesService  
InformationOwner's  
Manual

Important Remarks!

Replace final drive oil at operating temperature

Gr. 33

Gr. 00

Use approved oil  
only

Check fluid level in tank for brake and clutch hydraulic systems

Gr. 00

Use approved brake  
fluid only

Check connections and lines of brake system for leaks and damage

Check tire inflation pressure, correcting if necessary (including  
spare wheel)

Gr. 36

Fill supply tank for windshield washing system

Gr. 00



## BMW MAINTENANCE SYSTEM

### General Information

00 00 210 1200 Mile Inspection

Repair  
Manual

### Technical Data

Nomina  
Values

### Service Information

Owner's  
Manual

Important Remarks!

Check function of following equipment:

Lights: headlights, parking lights, backup lights, license plate lights, passenger compartment light, glove box light, engine compartment light and trunk light.

### Aiming of headlights

Gr. 63

Indicators: turn signals, hazard lights, stop lights, headlight flasher and headlight dimmer switch

Inspect check control

+

524 td: check indicator lights of glow plug system

+

Check instrument lights, indicator lamps, windshield wipe/wash system and aiming of spray jets, heater and air conditioner blowers, rear window defogger

+

Final inspection and test drive with check of fuel injection system and operational safety of:  
brakes, steering, clutch or automatic transmission and mirrors

+

**Caution:** On systems with Politec brake linings, increased braking effect

**Break in parking brake (vehicles with rear disc brake only)**

Gr. 34

BMW MAINTENANCE SYSTEM	General Information					Important Remarks!
	Repair Manual	Technical Data	Nominal Values	Service Information	Owner's Manual	
00 00 220 BMW Inspection I						
Replace engine oil and oil filter at operating temperature	Gr. 11			Gr. 00	+	Use approved oil only
Check and adjust valve clearance	Gr. 11	Gr. 11				
Lubricate joints and bearings of accelerator linkage, rotary shaft and throttle linkage with oil; lubricate bearings of throttle lever and gate with grease						
Check fuel tank, tank cap, lines and connections for leaks						Visual inspection
Check cooling system and all connections as well as heater hoses for leaks. Check coolant level and concentration, correcting if necessary.				Gr. 00	+	
<i>Important!</i> Coolant must be drained completely and replaced every 2 years.						
Check condition, routing, suspension and leaks on exhaust assembly	Gr. 18					
Replace automatic transmission fluid at operating temperature (only in Inspection I)	Gr. 24	Gr. 24		Gr. 00		Use approved ATF only
Replace oil filter screen in automatic transmission (only in Inspection I)	Gr. 24	Gr. 24				

# 00 - 11

## BMW MAINTENANCE SYSTEM

## General Information

00 00 220 BMW Inspection I

Check manual transmission oil level, correcting if necessary

Gr. 23

Gr. 00

Use approved oil only

Check power steering for leaks and oil level, correcting if necessary

Gr. 32

Gr. 00

Check condition of tie rods, front axle joints, drop arms and coupling

Gr. 31/34/36

Tightening torque/  
visual inspection of  
cotter pins

Check mechanical steering play, adjusting if necessary

Gr. 32

Check final drive oil level, correcting if necessary

Gr. 00

Use approved oil only

Remove and install front and rear disc brake pads, check total thickness, check surface condition of brake discs. If necessary, replace (against extra charge). Lubricate aluminum wheel rim centers with grease.

Gr. 34

Gr. 34

Gr. 36

Check fluid level in tank for hydraulic brake and clutch systems, correcting if necessary  
Important: replace brake fluid annually at latest.

Gr. 34

Gr. 00

Use approved brake fluids only

Check brake calipers and dust boots for leaks

Gr. 34

Gr. 00

visual inspection



BMW MAINTENANCE SYSTEM	General Information					Important Remarks!
	Repair Manual	Technical Data	Nominal Values	Service Information	Owner's Manual	
00 00 220 BMW Inspection I						
Check brake lines and connections for leaks damage or distortion. Check movement of parking brake cables. Adjust parking brake.	Gr. 34					
Check tire inflation pressure, correcting if necessary (including spare wheel). Check trunk for gasoline odor.				Gr. 36	+	
Check condition of tires. If worn unevenly and customer orders: check and adjust wheel alignment (against extra charge).	Gr. 32					
Tighten bolts and nuts of door locks and strikers. Lubricate door hinges and hood hinges with oil; lubricate door locks with grease and check function.						
Check battery acid level, adding distilled water if necessary						
Check function of air conditioner and Freon charge	Gr. 64					
Tighten mounting bolts of A/C compressor		Gr. 64				
524 td: check indicator lights of glow plug system					+	Tightening torque
524 td: with the 4th Inspection I replace toothed belt	Gr. 11					
524 td: with the 4th Inspection I replace glow plugs (necessary for California version only)	Gr. 12					

## BMW MAINTENANCE SYSTEM

## General Information

00 00 220 BMW Inspection I

Repair  
ManualTechnical  
DataNominal  
ValuesService  
InformationOwner's  
Manual

Important Remarks!

Check function of following equipment:  
 Lights: headlights, parking lights, backup lights, license plate lights, passenger compartment light, glove box light, engine compartment light and trunk light.  
 Indicators: turn signals, hazard lights, stop lights, horn, headlight flasher and dimmer switch.  
 Check aiming of headlights, correcting if necessary.  
 Test check control.

Gr. 63

Fill supply tank for windshield washing system check antifreeze protection

Check function of windshield wipe/wash system and aiming of spray jets.

Check instruments lights, control lights, heater and air conditioner blower and rear window defogger.

Check condition and function of seat belts.

Final inspection and test drive with check of operational safety: brakes, steering, clutch or automatic transmission and mirrors.

Gr. 00

+

Caution: On systems with Politec brake linings, increased braking effect

Break in parking brake.

Gr. 34

*Important!*

The Service Indicator (SI) must be reset after completion of inspection I as follows.

Switch off all electrical equipment.

Turn on ignition.

Do not run engine.

Plug SI-R \* in diagnosis socket.

Push in and hold recessed, red INSPECTION button - green lamp (function control) comes on.

Red lamp also comes on after approx 3 sec. and goes out after approx. 12 sec.

Release inspection button - green lamp goes out.

Checking Service Indicator (SI):

All five green diode lights must be on.

Yellow and possibly red diodes as well as INSPECTION sign should go out.

\* SI-R = Service indicator resetter, Order No. 62 1 100.



62 1 100

20 00 006



## BMW MAINTENANCE SYSTEM

## General Information

00 00 230 BMW Inspection II = Inspection I + Additional Jobs

Check all drive belts, adjust tension if necessary

Gr. 12/32/64

Replace spark plugs

Gr. 12

+

Air cleaner: replace air filter cartridge

Gr. 13

Replace filter cartridge more frequently when car is operated in dusty regions.

Replace fuel filter

Gr. 16

+

Shorten intervals when contaminated fuel was used

Check clutch drive plate for wear

Gr. 21

Replace manual transmission oil at operating temperature

Gr. 23

Gr. 00

Use approved oil only

Check automatic transmission oil level correcting if necessary (only in inspection II)

Gr. 24

Gr. 00

Use approved oil only

Check front wheel bearing play

Gr. 31

524 td: check injection timing

Gr. 13

524 td: check idle rpm

524 td: check and adjust toothed belt

Gr. 11

524 td: with the 2nd Inspection II replace glow plugs (on 49 states model only, but recommended for California version)

Gr. 12

## BMW MAINTENANCE SYSTEM

## General Information

00 00 230 BMW Inspection II = Inspection I + Additional Jobs

Repair  
ManualTechnical  
DataNominal  
ValuesService  
InformationOwner's  
Manual

Important Remarks!

Replace final drive oil at operating temperature

Gr. 33

Gr. 00

Use approved oil  
only

Check condition of dust covers on output shafts

Car with rear brake discs: Check parking brake liner thickness

Gr. 34

Gr. 34

If necessary:

Replace parking brake liners against extra charge

Gr. 34

*Important!*

The Service Indicator (SI) must be reset after completion of inspection II as follows.

Switch off all electrical equipment.

Turn on ignition.

Do not run engine.

Plug SI-R \* in diagnosis socket.

Push in and hold recessed, red INSPECTION button - green lamp (function control) comes on.

Red lamp also comes on after approx. 3 sec. and goes out after approx. 12 sec.

Release inspection button - green lamp goes out.

Checking Service Indicator (SI):

All five green diode lights must be on.

Yellow and possibly red diodes as well as INSPECTION sign should go out.

\* SI-R = Service Indicator resetter, Order No. 62 1 100.



62 1 100

20 00 005

## BMW MAINTENANCE SYSTEM

## General Information

00 00 240 BMW Annual Check (after every 11 to 13 months)

Important: renew brake fluid annually

Gr. 34

Gr. 00

Use approved brake fluids only

Check aiming of headlights, correcting if necessary

Gr. 63

Important: coolant must be drained completely and renewed every 2 years, Check antifreeze protection (against extra charge)

Gr. 00

Use approved anti-freeze additives only

Inspect body according to the terms of the BMW 6 year limited warranty-rust perforation

+

Register check of repair in Owners Handbock

Reminder only!

Replace oxygen sensor every 50 000 Miles or 80 000 km

Gr. 11

528 e: replace oxygen sensor every 30 000 Miles or 48 000 km, reset oxygen sensor indicator light

Gr. 11



## BMW MAINTENANCE SYSTEM

## General Information

00 00 249 BMW Engine Oil Service

Repair  
ManualTechnical  
DataNominal  
ValuesService  
InformationOwner's  
Manual

Important Remarks!

Engine oil and oil filter — replace at operating temperature

*Important!*

The Service Indicator (SI) must be reset after completion of the oil service as follows.

Switch off all electrical equipment.

Turn on ignition.

Do not run engine

Plug SI-R \* in diagnosis socket.

Push in and hold yellow OIL SERVICE \*\* button - green lamp (function control) comes on.

Yellow lamp also comes on after approx. 10 sec. and goes out after approx. 3 sec.

Release oil service button - green lamp goes out.

Checking Service Indicator (SI) after 10 Seconds:

At least one green diode light (however more than before) should come on.

Yellow (possibly red) diode and OIL SERVICE sign must go out.

\* SI-R = Service indicator resetter, Order No. 62 1 100.

*\*\* Caution!*

Resetting with the wrong button cannot be corrected.

Service Intervals would be mixed up - also refer to BMW Technik information of Group 62.



62 1 100

20 00 006

Gr. 00

Only use approved  
oil

BMW MAINTENANCE SYSTEM	General Information					Important Remarks!
	Repair Manual	Technical Data	Nominal Values	Service Information	Owner's Manual	
00 00 259 Additional Recommended Service (To be invoiced seperately)						
Steering Test: Steering gear, linkage, coupling, connetions, leaks, oil volume and condition for power steering	Gr. 32			Gr. 00		Use only approved oil
Brake Test: Brake pads (remove and install wheels), brake discs, lines, hoses, connetions, brake fluid level	Gr. 34					
<i>Important!</i> Replace brake fluid at least annually.				Gr. 00		Use only approved brake fluids
Tire and Wheel Rim Test: Condition, tire inflation pressure and specified size (including spare wheel)		Gr. 36		Gr. 36		
Light Test: Headlights, additional headlights (also aiming), parking lights, tail Lights backup liegts, license plate lights, instrument and sign lights, indicator and warning lamps	Gr. 63					
Signal Test: Horns, headlight flasher, turn signals, hazard lights, stop lights and rear fog light						
Wipers and Washer/Cleaners Test: Wiper blades, wayer (windshield and, if applicable, headlights), tank (fluid level/antifreeze), spray jet aiming (windshield and, if applicable, headlights). If equipped, intensive cleanser level.				Gr. 00	+	
Seat Belt Test: Condition and function	Gr. 72					
Clean cassette tape head capstan and pinch rollers every 50 - 100 hours of operation or earlier if quality of sound is impaired						
Final inspection and test drive with check of operational safety: brakes, steering, clutch or automatic transmission and mirrors						Caution: On systems with Politelex brake linings, increased braking effect
Remarks: Repairs and adjustments against extra charge.						